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Transhumanism (dot) Mil: A Bibliometric Analysis of Technoprogressive Terms in Military Publications

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Abstract

Has transhumanism influenced military thinking? Previous work found that transhumanist terms did not appear widely in military publications. The present work analyzes and improves on previous content analysis of transhumanist terms in military literature using the tools of library and information studies.

Keywords: transhumanism, terrorism, singularity, security, war, peace, bibliometrics, library science, content analysis

Introduction: A “transhumanism” tangle

Transhumanism is a far-reaching collection of concerns, but over the last generation its central themes have become consolidated. Artificial intelligence, genetic editing, athletic performance enhancement, smart drugs and cognitive enhancement, brain-computer interfaces, and artificial (and augmented) realities -- and the impact of all of these technologies on social progress and ethics -- are typical of its major discussions (Baumann, 2010; Juengst, 2019; Baily, 1998). To understand the role of any *transhumanism* in any particular domain, we must define

the essence of this wide field. Although there has long been debate about the nature and characteristics of transhumanism amongst technologists, social-scientists, philosophers, and other interested observers (Bailey, 2017; Bostrom, 2005) there are common themes to pull from for definitions, and summary patterns can be reached by way of textual analysis.

Previous efforts limited “transhumanist terms” to the following five: artificial intelligence; biotechnology; nanotechnology; posthuman; transhuman (Evans, 2007, p. 162). We will refer to this set of five transhumanist terms from 2007 as TT5. The method and rationale for this is worth quoting in full:

The terms were taken from the World Transhumanist Association's website, and all appear on the Frequently Asked Questions pages. These terms are arguably among the most fundamentally important to the concerns of transhumanism as a whole; their appearance on the WTA's FAQ confirms their importance to the field. There are, of course, many other terms under the transhumanism umbrella besides the 5 used here, and a more thorough study, including a greater number of terms and a more diverse set of terms, should be conducted in the future (ibid., p. 163).

The weakness in the above statement is that it asks the reader to accept TT5 as (arguably) the most important to transhumanism on the basis of their appearance in the FAQ of an important transhumanist organization. Although this was perhaps adequate for its time (2006-2007), herein the method will be expanded with textual analysis to build a more rigorous set of transhumanist terms. Below we apply the results to military literature.

But why military literature? MacIntosh highlights the importance of understanding security interests in transhuman concerns:

Personal and political security are at risk from the potential for abuse of [Nano-Bio-Info-Cogno] technologies by States and other organizations. Left in the

control of elites, these technologies could be used to create dystopian societies to rival anything in science fiction. In fact, the entire notion of personhood could be at risk. If these technologies can be distributed and regulated for the good of the community, however, they hold the promise of making a far better world (2010, p. 45).

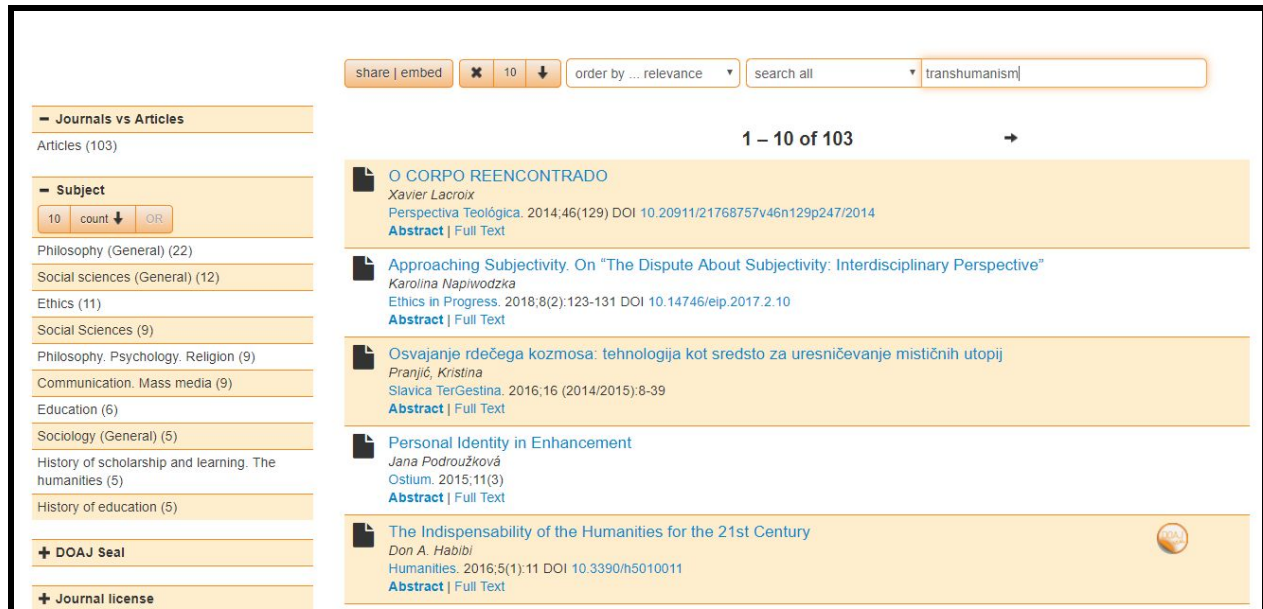
Are States and their militaries considering the use of such technologies for security, for defense, and for offense? The evidence is overwhelming that this is the case (scroll through DARPA's timeline of achievements, 2019). Would control of such technology be used to "create dystopian societies"? Though this is not the present technical concern of this paper, it is concerning. Understanding the scope of transhumanism in military literature may arm future researchers with stronger textual evidence for their future discoveries.

Analysis: transhumanism and its terms

TT5 "were taken" from the World Transhumanist Association, but we have no indication as to why they were selected. We will develop a new set, TT65, by taking the sixty-five most common unique terms appearing in the titles of articles in *Journal of Evolution and Technology* (JET). JET, like the World Transhumanist Association, remains an important forum for transhumanists to discuss the impacts of advanced technology on society; JET, however, is also a long-lived peer-reviewed journal that has published the work of many notable thinkers on technology, including Oxford philosopher Nick Bostrom, sociologist James Hughes, and roboticist Hans Moravec.

Two important tools were used to identify relevant transhumanist journals. The first, Directory of Open Access Journals (DOAJ), revealed 103 articles containing the term "transhumanism" (sometimes in translation to English). Searching for "transhuman*" revealed 137 results at the time of the search, but some number of these referred to "transhumance", the agricultural practice. Zero journal records were returned, indicating that although a number of

journals have published articles concerned with transhumanism, no indexed journals in DOAJ appears to be primarily concerned with transhumanism. See Figure 1:



[Figure 1]

Ulrich's (ProQuest's Ulrichsweb.com) was the second tool used to identify transhumanist journals. "Transhumanism" retrieved zero journals as a subject term, but one result when used as a keyword search. The resulting journal was JET, which appears to have been first published in 1998 as *Journal of Transhumanism*. See Figures 2 and 3. Are there other influential sources for transhumanist articles? One finds a number of interesting options that may be useful for future similar explorations (*h+ Magazine*, *The New Atlantis*, and an extensive transhumanist-themed body of science fiction in a wide range of media, for example), but the present paper will use JET as a basis for discovering applicable transhumanist terms for searching the military literature.

▼ Basic Description	
Title	Journal of Evolution and Technology
ISSN	1541-0099
Publisher	World Transhumanist Association
Country	United States
Status	Active
Start Year	1998
Frequency	Irregular
Language of Text	Text in: English
Refereed	Yes
Abstracted / Indexed	Yes
Serial Type	Journal
Content Type	Academic / Scholarly
Format	Online
Website	http://jetpress.org/
Description	Publishing contemporary research into future science and philosophy.

[Figure 2]

```

transhumanism - (1)
+(transhumanism) +
(+subject_keyword:
(transhuman*)). - (0)
+(+subject_keyword:
(transhuman*)). - (0)

```

[Figure 3]

More analysis: What is JET about?

Over 21 years, JET has produced 29 volumes and has published 207 articles. Treating the titles of all articles to two separate online concordancers (Text Fixer and WriteWords) and comparing the results, the most common primary terms (excluding common words such as articles “a” “the” “and” etc., but including month names, personal names, and years) appearing at least twice, numbered 298. Editing these 1) to remove individual author names, common words, years, numbers, adjectives, and false positives, and, 2) to consolidate terms with similar meanings, closely-related terms, or the same terms with varying tenses and forms, the following list, TT65, remains:

Human	Enhancement	Transhuman	Future	Technology
Evolution	Moral	Life	Unemployment	Genetic
Personhood	Minds	Rights	Religion	Cognitive
Ethics	Brain	Health	Posthuman	Machines
Income	Principle	Nonhuman	Overhuman	Science
Engineering	Simulations	History	Global	Artificial
Data	War	Philosophy	Risk	Superintelligence
Cyborg	Singularity	Therapy	Community	Christian
Cryonics	Psychology	Uploading	Medical	Policy
Anthropocentrism	Animals	Paradigm	Immortality	Ecology
Death	Existential	Robots	Theory	Cosmic
Political	Body	Transcendence	Work	Europe
Ideals	Cloning	Progress	Empathy	Serendipity

[Figure 4]

Though titles can be misleading, can be used to manipulate the aesthetic experience of the content (Millis, 2001), and have typically been generated by authors without editorial guidelines (Goodman, 2001, p. 78), titles are yet good indicators of a text's main concerns, or indicate what an author and/or editor thinks is most important to communicate about a text. As Aleixandre-Benavent (2014, p. 782) puts it, "despite being a very small part of a research paper, the title plays an important role and... provide[s] a brief general description of the content of the article." TT65 are therefore a good basic indicator of the major concerns and subjects of the whole of JET, which itself is, again, the only peer-reviewed academic journal primarily concerned with transhumanism. These terms provide an expanded set of tools to revisit the impact of transhumanism on military literature.

Application to United States military literature

The searching of military literature took place in four phases. First, websites with the “.mil” upper level domain were searched for TT65. Secondly, repeating the process of the early study, EBSCOhost’s *Military & Government Collection* (MGC) was searched for TT65.

The web results using Google revealed 112 results. This search was done in three phases, as the Advanced Search input can only take 32 terms per search. The search was for the terms “anywhere in the page”, and the OR Boolean operator was used between each term (searching for “any of these terms”). TT65 were broken into three searches to fit the input requirements, and the total results were then summed. Web results for the term “transhumanism” on its own in the .mil domain numbered 8.

MGC allowed for all TT65 with OR operation at once, and this search retrieved 1,665,504 results, unfiltered for full text, date range, language, or other factors. TT65 were searched as keywords. Searching MGC for the keyword term “transhumanism” alone, retrieved 20 results, also unfiltered. Luckily, “transhumanism” is a formal subject term in MGC -- unfiltered results for a search on it as a descriptor retrieved 10 results. 4 of those 10 were from The Institute of Electrical and Electronics Engineers (IEEE) publications, 2 were from Bloomberg Business, and the remaining 4 were from *Futurist*, *The New Republic*, *New Yorker*, and *Time*.

Many of the TT65, though significant in the titles of transhuman articles in JET, are not of themselves necessarily significant indicators of transhumanism; “philosophy” is a concern within transhumanism, but this term’s appearance in at least one article within one of the 400 indexed periodicals of MGC does not necessarily point to that article’s particular concern for or relevance to transhumanism. Therefore perhaps the best indicator of whether transhumanism has influenced military thinking is to look at the prevalence of the term “transhumanism” itself, a

term that appears in both 2007's TT5 and the present TT65. Out of millions of indexed records in MGC, transhumanism appears 20 times as a keyword and 10 as a subject descriptor. It appeared 8 times a web search of the .mil domain.

Conclusions

Whether considering the 112 .mil web results for TT65, or the mere 10 results for “transhumanism” as a subject descriptor in MGC, one may conclude that transhumanism has not had a widespread influence on military-related literature. This essential finding, though expanded with more careful methods here, does not change the conclusions of the original 2007 investigation.

Future versions of this work could be taken in a number of interesting directions. The abstracts of all 207 (and counting) articles in JET, or their full text, could be harvested as the titles were here to reveal new patterns. Another element to explore is the temporal changes in transhumanism since JET's first article in 1998 -- though the term “transhumanism” has had staying power for a generation, what other related terms have increased and decreased in use amongst the transhuman community? This work has also been limited to English. Similarly-structured efforts at content analysis for transhumanist terms in other languages would be of use; related concerns appear increasingly in Russian and Polish academic publications, for example. Finally, what is revealed by connecting this present and near-future concern with technological change through the lens of transhumanism to earlier shifts in military culture and technology?

There remains much to explore in the connections between transhumanism and global security.

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